

A REVISION OF THE *OZOPHORA UMBROSA* COMPLEX IN THE WEST INDIES (HEMIPTERA: LYGAEIDAE)

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Abstract.—A complex of species of *Ozophora* in the West Indies is discussed and a key presented to distinguish the species. Two new species are described: *Ozophora umbrosa* (widespread in the Greater Antilles and known to occur in the Bahamas) and *Ozophora archboldi* known only from Dominica. *Ozophora fuscifemur* Scudder, known from Little Cayman I. and Cayman Brac, is reduced to a subspecies of *Ozophora pallidifemur* Scudder from Grand Cayman. *Ozophora levis* Slater and Baranowski is reported from several islands of the Bahamas. There are descriptions of the nymphs and notes on the habitat of *Ozophora umbrosa*. Twelve illustrations of distinguishing details of the genitalia are included.

The West Indies contains a wealth of species of the genus *Ozophora*. Obviously the genus has radiated extensively from several mainland sister group sources.

One of the most difficult complexes to understand has been a group of species distinguished primarily by their predominantly dark chocolate brown coloration that contrasts strikingly with pale yellow maculae or elongate stripes on the hemelytra. Whether or not this complex will prove to be a monophyletic group within *Ozophora* must await studies now underway on the extensive Central and South American faunas. However, whether monophyletic or not, the various taxa are difficult to distinguish from one another and the present paper is an attempt to clarify taxonomic relationships within the islands and to provide a means of identifying the species.

In summary the following taxa are involved.

1. *Ozophora levis* Slater and Baranowski—found on the Florida Keys and in the Bahamas.
2. *Ozophora pallidifemur* Scudder (with a subspecies *fuscifemur*)—endemic on the Caymans.
3. *Ozophora umbrosa* new species—found throughout the Greater Antilles and in the southern and central Bahamas.
4. *Ozophora archboldi* new species—endemic on Dominica.

All of these species are about "average size" for the genus (5–7 mm) with calloused but not sharply carinate lateral pronotal margins, rounded or slightly angulate humeral angles, usually with a large white fourth antennal annulus and with the membrane of the front wing a completely dark smoky gray.

The most common and widespread species is *Ozophora umbrosa*. It stands in many collections as *Ozophora atropicta* Barber. However, as indicated by Slater and Hassey (1981) Barber's type series was mixed and the holotype of *atropicta* is a species not closely related to this group, thus leaving this widespread and common species without a name.

All measurements are in millimeters.

KEY TO SPECIES OF THE *OZOPHORA UMBROSA* COMPLEX

1. Dorsal surface of body with many upstanding hairs present (short in *pallidifemur*) . . . 2
 - Dorsal surface of body almost glabrous 4
2. Labium elongate extending onto third abdominal sternum; hairs on dorsal surface numerous and elongate (Dominica) *archboldi* n. sp.
 - Labium at most slightly exceeding metacoxae; dorsal hairs short and inconspicuous 3
3. Femora pale yellow (Grand Cayman) *pallidifemur pallidifemur* Scudder
 - Femora reddish or dark brown (Little Cayman; Cayman Brac)
 - *pallidifemur fuscifemur* Scudder
4. Males with cup-like sclerite of genital capsule very broad, truncated and heavily sclerotized at outer ends (Fig. 1) *umbrosa* n. sp.
 - Males with arms of cup-like sclerite elongate, slender, not truncate and not heavily sclerotized distally (Fig. 2) *levis* Slater and Baranowski

***Ozophora umbrosa*, new species**

Figs. 1, 4, 7, 11, 12

Description. General coloration dark chocolate brown. Marked with pale yellow as follows: anterior pronotal collar on either side of midline; narrow lateral margins of anterior two-thirds of pronotum; a small yellow macula immediately behind transverse impression on either side of midline of posterior pronotal lobe; humeral angles of pronotum; a small macula along posterior pronotal margin midway between meson and humeral angle; a pair of diagonal pale vittae on scutellum laterally; a pale patch basally on corium laterad of radial vein; an elongate narrow pale stripe adjacent to costal margin at level of claval commissure; a large macula on distal third and extreme apex of corium. Membrane fumose throughout, lacking a pale apical stripe. Pleural and sternal surfaces nearly uniformly dark chocolate brown, but with dorso-caudal angle of metapleuron pale yellow. Coxae, fore femora and distal four-fifths of middle and hind femora dark red brown. Remainder of legs testaceous. First antennal segment, distal one-fourth of second, distal one-third of third, extreme base and apical one-half of fourth dark red to chocolate brown; remainder of segments 2 and 3 light yellowish brown; proximal one-half (except for extreme base) of fourth segment a strongly contrasting white.

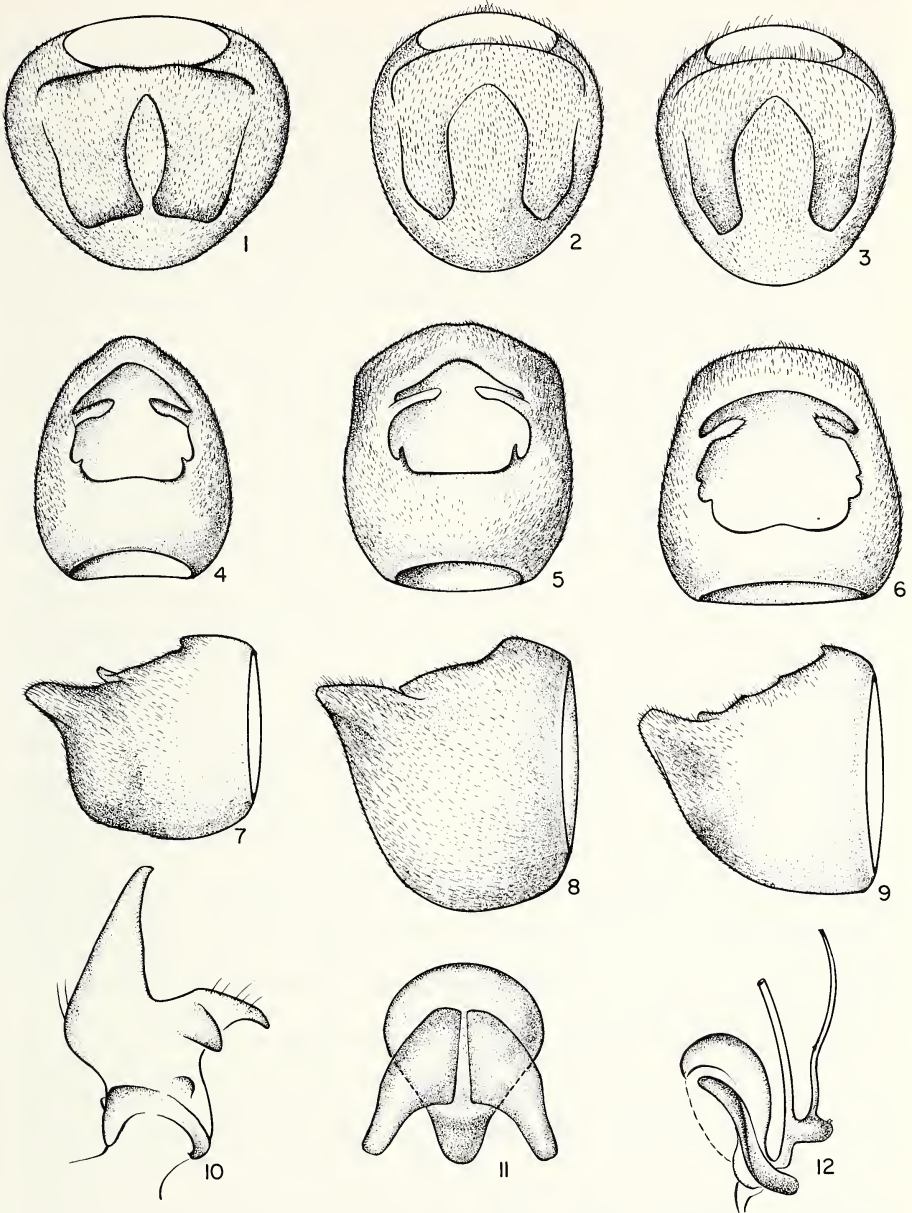
Head short, only slightly declivent; tylus reaching middle of first antennal segment. Eyes large, ovoid, sessile, covering most of lateral head surface. Length head 0.80, width 0.88, interocular space 0.40. Pronotum somewhat campanulate, posterior margin very shallowly concave; lateral margins deeply concave and considerably narrowed across anterior lobe as compared with distance across humeri; transverse impression shallow but complete; anterior collar strongly differentiated; calli confluent mesally; pronotal punctures discrete, well developed on posterior lobe and anterior to calli before collar. Length pronotum 0.96, width 1.40. Length scutellum 0.84, width 0.72. Hemelytra with lateral corial margins very slightly sinuate at level of apex of scutellum. Clavus with numerous irregular punctures not forming distinct rows except laterally on either side of elevated cubital vein. Length claval commissure 0.66. Midline distance apex clavus-apex corium 1.20. Midline distance apex corium-apex abdomen 0.84. Labium rather elongate, extending well between metacoxae, first segment almost reaching base of head. Length labial segments I 0.84, II 0.76, III 0.64, IV 0.40. Length antennal segments I 0.76, II 1.56, III 1.28, IV 1.60. Total body length 5.20.

Cup-like sclerite of genital capsule very broad, truncated, thickened and heavily sclerotized at outer ends (Fig. 1). Genital capsule bluntly produced posteriorly at dorsal margin (Fig. 7), with dorsal opening in which parameres lie broadly expanded caudally (Fig. 4).

Paramere similar to *levis* but variable with inner projection thick, sometimes not strongly bent downward; blade relatively straight; basal flange often broadened toward inner margin. Sperm reservoir (Figs. 11, 12) with broad cup strongly tapering basally and distally narrowed wings.

Holotype. ♂, JAMAICA: *St. Ann Parish*: 3 miles W Ocho Rios. 4.VII.1971 (J. A. Slater, R. M. Baranowski, J. E. Harrington). In American Museum of Natural History.

Paratypes. JAMAICA: 6♂♂, 12♀♀, same data as holotype. 15♂♂, 13♀♀, 3 miles W Ocho Rios 11.XII.1970 (R. M. Baranowski & J. A. Slater). 1♂, 3♀♀, St. Anne's, Runaway Bay 25.VII-10.VIII.1971 (S. S. Duffey). 1♂, same 10.V.1970. 2♂♂, same 21.VI.1970. 1♂, same 28.VI.1970. *Clarendon Parish*: 2♂♂, 3♀♀, Portland Ridge PWD Fish Camp 20.VIII.1969 (R. E. Woodruff) (Blacklight trap). 1♂, Milk River Bath 14.V.1965 (R. E. Woodruff) (Blacklight trap). *St. Catherine Parish*: 1♀, Worthy Park Estate 21.XI.1968 (R. E. Woodruff) (Blacklight trap). 2♂♂, same 10.XI.1968. 1♀, same 11.V.1969. 1♂, same 16.XI.1968. 1♂, Worthy Park Estate 3.VI.1970 (E. G. Farnsworth) (Blacklight trap). *St. Andrew Parish*: 1♀, Bamboo Lodge nr. Irishtown 2,500 ft. 19.VIII.1972 (R. M. Baranowski) (Blacklight trap). *Trelawney Parish*: 4♂♂, 1.9 mi. N. Burnt Hill 16.V.1969 (R. E. Woodruff) (Blacklight trap). DOMINICAN REPUBLIC: 9♂♂, 10♀♀, *Prov. Pedernales*, 21 KM N Cabo Roso 18.VI.1976 (R. E. Woodruff). 2♂♂, 1♀♀ same 19.VI.1976 (Blacklight trap). 1♂, 3♀♀, 21 N Cabo Rojo 19-20.VI.1976 (R. E. Woodruff & E. E. Grissell) (Malaise trap). 8♂♂, 12♀♀, *Prov. Pedernales* (no locality) 19.VI.1976 (R. E. Woodruff). 1♀, S Side Lake Enriquillo IX.1938 (Darlington). 1♂, Cabrera 1.VIII.1978 (R. O. Schuster). 1♂, no locality 1976 (R. Devoe) (Blacklight trap). 1♂, S Domingo 8.X.1966 (L. H. Rolston). *Prov. Altagracia*: 1♂, Nisibon 9.VI.1976 (R. E. Woodruff) (Blacklight trap). 4♂♂, 3♀♀, same 8.VI.1976. 1♂, 2♀♀, same locality 8-10.VI.1976 (R. E. Woodruff & E. E. Grissell) (Malaise trap). *Prov. La Romana*: 3♂♂, 1♀, Higueral 15.VIII.1977 (R. E. Woodruff & E. Folch) (Blacklight trap). 1♂, same 18.VIII.1977. 2♀♀, La Romana 13.IX.1976 (E. Folch) (Blacklight trap). 1♀, same 18.IX.1976. *Prov. El Seibo*: 1♂, 5♀♀, Miches 9.VI.1976 (R. E. Woodruff) (Blacklight trap). *Prov. Santiago*: 1♂, Pedro Garcia 23.VIII.1967 (J. C. Schaffner) (at light). *Prov. La Vega*: 1♂, 8.VIII.1967 (L. H. Rolston). *Prov. Puerto Plata*: 1♂, 3♀♀, no locality (Hurst). 1♂, 22.VII.1967 (L. H. Rolston). HAITI: 7♂♂, 5♀♀, Diquini (W. M. Mann). 1♂, Port au Prince, Thor 10-12.X.1970 (J. E. Porter) (Blacklight trap). 1♂, Port au Prince (Mann). 1♀, Trou Caiman 15.XI.1934 (Darlington). 1♀, Petion. CUBA: 2♀♀, Guantanamo Bay Naval Base, Caravella Point 8-11.V.1972 (S. Calhoun) (Blacklight trap). 1♀, same 20.III.1972. 2♂♂, same 6.IX.1972. 2♂♂, same 11.IX.1972. 2♂♂, 2♀♀, same 2.X.1972. 1♀, same 30.X.1972. 1♂, same 31.X.1972. 2♂♂, 2♀♀, same 13.XI.1972. 1♀, same 15.XI.1972. 6♂♂, 16♀♀, Guantanamo Bay Naval Base, Kittery Beach Housing Area 8-11.V.1972 (S. Calhoun) (Blacklight trap). 8♂♂, 16♀♀, same 15-18.V.1972. 1♂, 3♀♀, same 24-27.VI.1972. 1♀, same 25.VII.1972. 2♀♀, same 21.VIII.1972. 2♀♀, Guantanamo Bay, Center Bargo 8.VIII.1972 (S. Calhoun) (Blacklight trap). 2♀♀, Guantanamo Bay 14.XI.1972 (S. Calhoun) (Blacklight trap). 1♂, 2♀♀, same 29.VIII.1972. 1♂, 1♀, same 14.XII.1972. 3♂♂, Guantanamo Bay 27.I.1970 (J.



Figs. 1-12. *Ozophora* spp. 1. *O. umbrosa*, "cup-like" sclerite of genital capsule, posterior view. 2. *O. levis*, "cup-like" sclerite of genital capsule, posterior view. 3. *O. pallidifemur*, "cup-like" sclerite of genital capsule, posterior view. 4. *O. umbrosa*, genital capsule, dorsal view. 5. *O. levis*, genital capsule, dorsal view. 6. *O. pallidifemur*, genital capsule, dorsal view. 7. *O. umbrosa*, genital capsule, lateral view. 8. *O. levis*, genital capsule, lateral view. 9. *O. pallidifemur*, genital capsule, lateral view. 10. *O. pallidifemur*, paramere. 11. *O. umbrosa*, sperm reservoir, dorsal view. 12. *O. umbrosa*, sperm reservoir, lateral view.

E. Tisdale) (Mosquito light trap). 1♀, same 12.III.1970. 1♂, same 20.III.1970. 1♂, 2♀♀, same 23.III.1970. 1♂, same 26.III.1970. 1♀, same 27.III.1970. 1♂, 2♀♀, 29.III.1970. 1♂, 1♀, same 30.III.1970. 1♂, 1♀, 31.III.1970. 1♀, same 1.IV.1970. 1♀, same 3.IV.1970. 1♀, same 12.IV.1970. 2♀♀, same 5.IV.1970. 1♂, 1♀, same 11.IV.1970. 1♂, same 20.IV.1970. 1♀, same 10.XI.1970. 2♀♀, same 14.XI.1970. 1♀, Guantanamo U.S.N. Base 8-19.II.1965 (Blacklight trap). 1♀, Habana-Marianao 15 m. 20.VII-20.VIII.1966 (F. Gregor). 1♀, Habana-Alamar 7-15.V.1965 (Jar. Prokop). PUERTO RICO: 16♂♂, 13♀♀, Rio Grande Co., 5 miles S Palmer 30.III-5.IV.1969 (Toby Schuh). 2♂♂, 1♀, Isabella Exp. Sta. 2.VII.1977 (R. E. Woodruff & A. E. Agostini) (Blacklight trap). 1♀, Guanica Insular Forest 6.XI.1953 (J. Maldonado Capriles). MONA I.: 1♂, 17-23.IV.1954 (J. Maldonado Capriles).

In American Museum of Natural History, University of California (Davis), Florida State Collection of Arthropods, National Museum of Natural History (U.S.N.M.), Texas A&M University, P. D. Ashlock, R. M. Baranowski, G. G. E. Scudder, and J. A. Slater collections.

Additional material examined. BAHAMAS: *Mayaguana I.* 65♂♂, 122♀♀, 26.VII-2.IX.1963 (C. Murvosh) (Blacklight trap). *Eleuthera I.* 1♂, 1♀, Rainbow Bay 18.XII.1975 (J. Wiley) (Blacklight trap). *Andros I.* 1♂, Forfar Field Stn. 10-15.VII.1983 (J. Peacock). *Berry I.* 1♀, Little Cay 1.V.1953 (E. B. Hayden & G. B. Rabb). *Great Abaco I.* 1♂, Marsh Harbour 6.V.1953 (E. B. Hayden & L. Giovannoli). 1♂, Fresh Creek 23.IV.1953 (at light) (E. B. Hayden & L. Giovannoli). *Turks and Caicos Isls.* 1♀, South Caicos I. 11.II.1953 (E. B. Hayden). 1♂, West Caicos I. 4.II.1953 (E. B. Hayden & L. Giovannoli).

Discussion. There is considerable color variation in this species. On Jamaica almost all specimens are dark gray or nearly black over the greater part of the body surface, the membrane never has a pale apex and the clavus is always deeply suffused. Frequently there are four pale maculae on the pronotum immediately behind the transverse impression and occasionally these are elongated to form short stripes but these are rarely so elongate as to subdivide the dark posterior portion of the pronotum. The first three antennal segments may occasionally be pale yellow although in such specimens the distal ends of the segments remain dark. Females tend to be darker than males, some females having the pale hemelytral macula reduced to a white spot adjacent to the corial apex. A few males are almost reddish-brown although they may be somewhat teneral.

This species may most readily be recognized by the distinct shape of the "cup-like sclerite" (Schaefer, 1977; Baranowski and Slater, 1983). The lobes of this sclerite are very broad and terminate in broad truncate darkly sclerotized distal ends that almost meet mesally (Fig. 1). Fortunately these sclerites are visible through the wall of the genital capsule and are the most reliable means of identification. Viewed laterally the caudo-dorsal end of the genital capsule is strongly but obtusely produced so that the posterior margin sweeps from the ventral to the dorsal surface in a concave arc (Fig. 7). This extension caudally of the capsule can also be observed in dorsal view (Fig. 4) where the posterior margin has a definite protrusion and the area of the dorsal opening in which the parameres lie is broadened mesally and trianguloid.

It is remarkable that this distinctive set of genital capsule features occurs in a species that is so variable in color and minor structural details.

The situation is most striking on Mayaguana Island in the Bahamas. I have ex-

amined an enormous series of *Ozophora* taken at a light trap from this island. The majority of specimens are of *umbrosa* which on the island tends to have the pale macula on the hemelytra fused to form an elongate pale stripe along the entire lateral area of the corium. In other words the transverse dark fascia that in specimens from the Greater Antilles reaches the lateral corial margin and separates the pale areas into discrete maculae is in Mayaguanan specimens reduced and does not attain the lateral corial margin thus creating a continuous pale stripe along the lateral portion of the corium. Occurring with *umbrosa* is a species of very similar external appearance but with a completely different genital and paramere shape. This latter species was recently described by Slater and Baranowski (1983) as *Ozophora levis* from Key Largo and the upper Bahamas. In that paper we discussed the presence of additional populations on Mayaguana and their relationships to those of the Greater Antilles.

In *levis* the arms of the "cup-like" sclerite are elongate and slender and broadly separated mesally (Fig. 2). Laterally the genital capsule ends in a sharp acute edge with the posterior margin not strongly concave (Fig. 8) and the portion of the dorsal opening on the capsule in which the parameres lie is not expanded (Fig. 5). The paramere has the inner projection elongate, tapering, and strongly down curved, the inner "tooth" broad and spatulate, the blade sinuate along the inner margin and the basal flange broad mesally, tapering anteriorly.

Externally, at least on Mayaguana, *umbrosa* may be distinguished from *levis* by having a pale first antennal segment (black in *levis*) and distinctly pale margins to the anterior pronotal lobe (in *levis* the lateral margins are dark and concolorous with the pronotal disc). In all specimens of *levis* examined the vittae on the posterior pronotal lobe that lie midway between the meson and margin are complete from the transverse impression to the posterior margin and the scutellum has a pair of pale spots. By contrast over 95% of the specimens of *umbrosa* from Mayaguana have the above pronotal vitta interrupted and most specimens lack a pair of pale scutellar spots. Specimens of *levis* from Key Largo and Eleuthera islands in the Bahamas are as above except that frequently the first antennal segment is pale. However, the color differences between Mayaguana specimens of *umbrosa* and those from the Greater Antilles is not true everywhere in the Bahamas. Specimens from Eleuthera and Andros islands are not appreciably different from those in the Greater Antilles. On the other hand Barber and Ashlock (1960) (under *atropicta*) discuss a series of 80 specimens from the Turks and Caicos islands and two from Fortuna Island as having only a narrow yellow marginal corial stripe. This is true of the few specimens I have examined as well.

Specimens of *umbrosa* from Hispaniola are very dark and usually lack pale pronotal margins, but do have a pale first antennal segment and like most populations from the Greater Antilles have conspicuous maculae rather than striping laterally on the hemelytra.

Specimens from Guantanamo Bay, Cuba approach some Bahaman material more closely than do specimens from the other islands of the Greater Antilles even to occasionally having the dark transverse fascia not reaching the lateral corial margin.

It is important to recognize that *levis* and *umbrosa* occur sympatrically on several islands of the Bahamas. On Eleuthera, for example, specimens of *umbrosa* are like those from the Greater Antilles (as are those from Andros) rather than of the Mayaguana type but typical specimens of *levis* also occur. Despite the usually reliable

color differences between the two species the genitalia should be examined for definitive identification.

MEASUREMENTS OF *OZOPHORA UMBROSA*

Abbreviations. N = number. LH = length head. WH = width head. IO = interocular space. AI = antennal segment I. AII = antennal segment II. AIII = antennal segment III. AIV = antennal segment IV. LI = labial segment I. LII = labial segment II. LIII = labial segment III. LIV = labial segment IV. LP = length pronotum. WP = width pronotum. LS = length scutellum. WS = width scutellum. ACL-ACO = apex clavus-apex corium. ACO-AAB = apex corium-apex abdomen. TL = total length.

Ozophora umbrosa Jamaica

	Males				Females			
	N	MEAN	SD	RANGE	N	MEAN	SD	RANGE
LH	15	0.74	.042	0.68-0.80	27	0.78	.047	0.72-0.88
WH	15	0.92	.047	0.84-1.00	27	0.98	.039	0.92-1.04
IO	15	0.39	.014	0.36-0.40	27	0.43	.019	0.40-0.48
A1	14	0.72	.035	0.64-0.76	27	0.71	.038	0.64-0.76
A2	14	1.53	.092	1.36-1.64	27	1.50	.078	1.36-1.64
A3	14	1.26	.075	1.12-1.36	27	1.23	.063	1.12-1.36
A4	11	1.50	.109	1.32-1.60	27	1.43	.059	1.36-1.60
L1	15	0.81	.038	0.72-0.84	27	0.85	.041	0.80-0.96
L2	15	0.75	.050	0.60-0.84	27	0.81	.041	0.76-0.92
L3	15	0.60	.038	0.52-0.64	27	0.65	.044	0.60-0.76
L4	15	0.38	.032	0.32-0.44	27	0.39	.029	0.60-0.76
LP	15	0.90	.060	0.80-1.00	27	0.97	.061	0.84-1.04
WP	15	1.34	.081	1.16-1.44	27	1.47	.087	1.32-1.60
LS	15	0.77	.058	0.64-0.84	27	0.84	.044	0.76-0.92
WS	15	0.67	.047	0.60-0.76	27	0.76	.043	0.64-0.84
ACL-ACO	15	1.12	.079	1.00-1.24	27	1.24	.066	1.12-1.36
ACO-AAB	15	0.79	.048	0.68-0.88	27	0.84	.059	0.72-1.00
TL	15	4.74	.301	4.16-5.20	27	5.30	.288	4.60-5.76

Ozophora umbrosa Puerto Rico

	Males				Females			
	N	MEAN	SD	RANGE	N	MEAN	SD	RANGE
LH	13	0.70	.026	0.64-0.72	13	0.73	.037	0.68-0.80
WH	13	0.88	.024	0.84-0.92	13	0.95	.030	0.92-1.00
IO	13	0.40	.011	0.36-0.40	13	0.43	.025	0.40-0.48
A1	13	0.64	.014	0.62-0.68	13	0.65	.019	0.64-0.68
A2	13	1.37	.037	1.32-1.44	13	1.36	.063	1.28-1.48
A3	13	1.13	.037	1.04-1.20	13	1.12	.045	1.04-1.20
A4	13	1.38	.042	1.28-1.44	13	1.34	.050	1.24-1.40
L1	13	0.77	.022	0.72-0.80	13	0.82	.031	0.76-0.88
L2	13	0.74	.020	0.72-0.76	13	0.78	.035	0.72-0.84

	Males				Females			
	N	MEAN	SD	RANGE	N	MEAN	SD	RANGE
L3	13	0.60	.029	0.56-0.64	13	0.63	.033	0.56-0.68
L4	13	0.37	.019	0.34-0.40	13	0.40	.038	0.36-0.48
LP	13	0.84	.021	0.82-0.88	13	0.90	.051	0.84-1.00
WP	13	1.29	.034	1.24-1.32	13	1.42	.060	1.36-1.56
LS	13	0.77	.035	0.68-0.76	13	0.80	.036	0.76-0.88
WS	13	0.65	.032	0.60-0.72	13	0.73	.039	0.64-0.80
ACL-ACO	13	1.13	.067	1.00-1.20	13	1.23	.090	1.00-1.32
ACO-AAB	13	0.79	.057	0.70-0.88	13	0.86	.074	0.76-1.04
TL	13	4.62	.103	4.48-4.80	13	4.99	.158	1.64-5.28

Ozophora umbrosa Haiti

	Males				Females			
	N	MEAN	SD	RANGE	N	MEAN	SD	RANGE
LH	7	0.78	.031	0.76-0.84	6	0.84	.062	0.80-0.96
WH	7	0.92	.015	0.92-0.96	6	1.01	.020	1.00-1.04
IO	7	0.41	.020	0.40-0.44	6	0.45	.020	0.44-0.48
A1	8	0.71	.028	0.68-0.76	6	0.72	.025	0.68-0.76
A2	8	1.60	.048	1.52-1.68	6	1.52	.046	1.44-1.56
A3	8	1.32	.040	1.28-1.40	6	1.28	.025	1.24-1.32
A4	8	1.48	.099	1.28-1.60	6	1.45	.048	1.40-1.52
L1	8	0.78	.037	0.72-0.84	6	0.85	.047	0.80-0.92
L2	8	0.78	.030	0.72-0.80	6	0.85	.039	0.80-0.88
L3	7	0.63	.030	0.60-0.68	5	0.69	.018	0.68-0.72
L4	7	0.38	.021	0.36-0.40	5	0.38	.022	0.36-0.40
LP	8	0.90	.036	0.84-0.96	6	1.00	.056	0.92-0.98
WP	8	1.41	.046	1.32-1.44	6	1.58	.055	1.52-1.68
LS	8	0.86	.037	0.80-0.92	6	0.94	.041	0.88-1.00
WS	8	0.75	.046	0.68-0.80	6	0.87	.070	0.76-0.92
ACL-ACO	8	1.22	.077	1.08-1.36	6	1.32	.084	1.24-1.44
ACO-AAB	7	0.91	.078	0.80-1.00	6	0.93	.078	0.84-1.04
TL	8	5.08	.260	4.72-5.36	6	5.44	.160	5.20-5.60

Ozophora umbrosa Dominican Republic

	Males				Females			
	N	MEAN	SD	RANGE	N	MEAN	SD	RANGE
LH	10	0.72	.053	0.62-0.80	10	0.75	.049	0.68-0.84
WH	10	0.91	.030	0.84-0.94	10	0.96	.030	0.92-1.00
IO	10	0.40	.013	0.38-0.42	10	0.44	.021	0.40-0.48
A1	10	0.58	.057	0.50-0.68	10	0.66	.062	0.58-0.72
A2	10	1.54	.098	1.42-1.66	8	1.46	.082	1.40-1.66
A3	9	1.27	.057	1.20-1.34	6	1.18	.052	1.10-1.26
A4	9	1.42	.059	1.34-1.50	6	1.30	.097	1.20-1.44
L1	10	0.66	.063	0.56-0.80	10	0.80	.058	0.68-0.88
L2	10	0.73	.030	0.70-0.78	10	0.82	.032	0.78-0.88

	Males				Females			
	N	MEAN	SD	RANGE	N	MEAN	SD	RANGE
L3	8	0.62	.041	0.58-0.68	7	0.65	.041	0.60-0.70
L4	9	0.37	.040	0.28-0.40	5	0.39	.027	0.36-0.42
LP	10	0.91	.044	0.84-0.98	10	0.99	.054	0.92-1.08
WP	10	1.38	.052	1.28-1.44	10	1.49	.051	1.44-1.60
LS	10	0.81	.040	0.74-0.88	10	0.87	.056	0.80-0.94
WS	10	0.70	.047	0.62-0.76	10	0.75	.045	0.68-0.80
ACL-ACO	10	1.14	.076	1.00-1.20	10	1.18	.118	0.90-1.32
ACO-AAB	10	0.85	.086	0.72-0.98	10	0.92	.142	0.76-1.16
TL	10	5.08	.019	4.80-5.28	10	5.30	.295	4.72-5.76

DESCRIPTION OF NYMPHS

Fifth instar (Ocho Rios, Jamaica). Head, pronotum, wing pads, femora, tibiae, first, third, and distal half of fourth antennal segments and broad suffused area on abdominal terga two and three mesally dark chocolate brown. Mesothoracic wing pads with middle area of explanate margin and a pale macula laterally at middle adjacent to explanate margin yellow. Abdomen other than as above speckled with numerous pale yellow to white spots; area about dorsal abdominal scent glands dark brown rather quadrate, anterior scent gland sclerotization largest becoming successively smaller posteriorly; a suffused reddish brown area along abdominal sutures. Thoracic pleura chiefly dark chocolate brown but mesopleuron with a pale dash near dorsal margin and metapleuron with outer (=upper) $\frac{1}{3}$ pale yellow with a longitudinal dark stripe through it. Coxae yellow mottled with dark brown. Second antennal segment dull yellowish brown becoming fuscous at distal end. Proximal one-half of fourth antennal segment with exception of extreme base white.

Head little declivent, tylus extending anteriorly midway along first antennal segment, epicranial stem very short. Length head 0.40, width across eyes 0.88; interocular space 0.46. Pronotum with anterior collar well delimited, lateral margins narrowly but acutely explanate, subquadrate. Length pronotum 0.70, width 1.12. Mesothoracic wing pads extending midway onto third abdominal tergum, moderately arcuate laterally. Length wing pads 1.40. Length abdomen 1.66. Forefemora rather slender, armed below with four or sometimes five small sharp spines. Labium extending well between metacoxae, first segment at most barely reaching base of head. Length labial segments I 0.70, II 0.74, III 0.42, IV 0.36. Length antennal segments I 0.48, II 1.08, III 1.00, IV 1.16. Total body length 3.80.

Fourth instar (as above). Similar in form and color to fifth instar. Second antennal segment completely yellowish brown. Tibiae pale, strikingly contrasting with dark femora. Pronotum with a pair of small yellow ovoid maculae on posterior margin midway between meson and humeri. Abdomen with dark area across third segment not extending anteriorly onto tergum two but reaching laterally to the forward extension of the Y-suture. Reddish markings on abdomen more strongly developed than in fifth instar. Metapleuron with a pale longitudinal stripe in dark area similar to but larger than that on mesopleuron. Length head 0.72, width 0.68; interocular space 0.38. Length pronotum 0.52, width 0.84. Length mesothoracic wing pads 0.60.

Length abdomen 1.52. Length labial segments I 0.50, II 0.40, III 0.46, IV 0.28. Length antennal segments I 0.32, II 0.74, III 0.70, IV 0.88. Total body length 3.32.

Third instar (as above). Very similar in form and color to instar four, area on either side of "Y"-suture between terga three and four broadly white forming a transverse white vittae across abdomen. Metapleuron also largely white with exception of a pair of transverse dark sclerotized areas thus giving insect an appearance of two transverse white stripes (possibly ant mimicry). Otherwise very similar in form and color to instar four. Length head 0.66, width 0.56; interocular space 0.30. Length pronotum 0.40, width 0.60. Length mesothoracic wing pads 0.26. Length abdomen 1.32. Length labial segments I 0.40, II 0.32, III 0.24, IV 0.24. Length antennal segments I 0.20, II 0.38, III 0.42, IV 0.27. Total body length 2.56.

BIOLOGY

The only biological information other than the frequency with which it comes to lights is from populations collected at the type locality three miles west of Ocho Rios on the north coast of Jamaica. Adults and nymphs were taken in litter below large specimens of *Ficus* sp. The longest series was a population from a habitat where figs were growing about the ruins of a large building. The fig trees were intricately entwined over the building ruins. They provided a heavily shaded habitat with little undergrowth, a relatively dry ground surface, the soil very friable and a moderate amount of leaf litter. This species runs very rapidly and when disturbed has a tendency to "flit" for a short distance rather than actually flying away. It was associated in this habitat with a species of the *pallescens* complex and with *Ozophora laticephala*. Our other collection was in the same general area but below figs growing along the edge of a precipitous cliff above the beach. At both of these locations the insects were feeding upon the seeds of *Ficus*.

Ozophora levis Slater and Baranowski

Figs. 2, 5, 8

Ozophora levis Slater and Baranowski, 1983:433-435.

Discussion. The primary recognition features and differences from *umbrosa* new species are discussed above.

Ozophora levis was originally described from Key West, Key Largo, Big Pine Key, and Plantation Key, Florida. At the time of the original description we mentioned that specimens from Andros Island and Great Abaco Island were perhaps conspecific. This is not true since both of these specimens are referable to *Ozophora umbrosa* new species. However, as noted above *levis* does occur in the Bahamas where, at least, on some islands, it is sympatric with *umbrosa*. It will probably be found to occur widely in the Bahamas.

Material examined. BAHAMAS: 26♂♂, 39♀♀, Mayaguana I. 3.VIII-1.IX.1963 (C. Murvoch) (Blacklight trap). ABACO CAYS: 1♂, Allans Cay 9.V.1953 (E. B. Hayden & G. B. Rabb). ELEUTHERA I.: 2♀♀, Current Cut 26.XI.1964 (D. Dean) (on ship at light). 1♀, Powell Pt. 24.XI.1964 (D. Dean) (on ship at light). EGG I. 1♀, 1 mi. NW Eleuthera I. 26.XI.1964 (D. Dean) (on ship at light). GREAT ABACO I.: 1♂, Marsh Harbour 6.V.1953 (E. B. Hayden & L. Giovannoli).

Ozophora archboldi, new species

Description. General coloration chocolate brown. Head, anterior pronotal lobe, a broad median and two large lateral rays on posterior pronotal lobe, greater portion of scutellum, extreme lateral areas of corium, membrane and most of pleural and ventral surfaces dark brown. Testaceous to almost dull white as follows: apex of tylus; anterior pronotal collar; a longitudinal stripe through posterior pronotal lobe on either side of midline; pronotal humeri; a short "dash" on each raised "arm" of scutellar "Y"; apex of scutellum; cubital vein on clavus; claval suture; middle of radial vein of corium; explanate lateral corial margins; an elongate dash near inner angle of apical corial margin and veins of membrane. Legs, labium and first three antennal segments pale yellow. Apex of labium darker. Fourth antennal segment dark brown, lacking a strongly contrasting white proximal annulus. Hind femora slightly darker distally but lacking a conspicuous subdistal dark annulus. Body clothed above with numerous elongate upstanding hairs. Pronotal hemelytral punctures prominent but shallow and well separated from one another.

Head elongate, tylus reaching distal one-third of first antennal segment. Length head 0.80, width 0.95, interocular space 0.48. Lateral pronotal margins sinuate, tapering markedly from humeri to anterior margin; transverse impression complete. Length pronotum 0.88, width 1.75. Scutellum with a conspicuous "Y"-shaped elevation. Length scutellum 0.83, width 0.83. Hemelytra with lateral margins conspicuously explanate, slightly sinuate. Length claval commissure 0.86. Midline distance apex clavus-apex corium 1.28. Midline distance apex corium-apex membrane 0.86. Forefemur with three prominent spines below on distal one-half (a very small additional spine distad of these) and three elongate proximally placed hairs. Hind femur with two spines above and below near distal end. Labium very elongate, first segment extending posteriorly well beyond base of head, labium reaching fourth abdominal sternum. Length labial segments I 1.05, II 1.13, III 1.0, IV 0.43. Antennae elongate, slender, terete. Length antennal segments I 0.60, II 1.50, III 1.30, IV 1.60. Total body length 5.80.

Holotype. ♂, DOMINICA: Grand Savane, 3.II.1965 (J. F. G. & Thelma M. Clarke). In National Museum of Natural History (U.S.N.M.) No. 100059.

Paratype. ♀, DOMINICA: Clarke Hall 10-12.X.1966 (A. B. Gurney). In J. A. Slater collection.

Discussion. The paratype has more extensively developed pale areas on the corium than does the holotype as follows: posteriorly the pale coloration of the explanate corial margin extends broadly mesad to reach the radial vein thus forming a pale distal macula; at the level of the claval commissure there is an oblong pale patch extending mesad from the radial vein to almost reach the medius. The labium is slightly shorter in the paratype but still extends well onto the third abdominal sternum.

This species is closely related to *Ozophora levis* Slater and Baranowski. The color patterns, size and shape of the two species are very similar. However, *levis* lacks elongate upstanding hairs on the dorsal surface, usually has five prominent ventral forefemoral spines, lacks dorsal spines on the hind femora, has a much shorter labium that, at most, only slightly exceeds the metacoxae and has a conspicuous pale fourth antennal annulus.

The presence on Dominica of three taxa with elongate dorsal hairs (*longirostris* Slater, *quinquemaculata subtilis* Slater and *archboldi* n. sp.) each of which is related to a taxon that lacks them (*longirostris* to *rubrolinea*, *q. subtilis* to nominal *quinquemaculata* and *archboldi* to *levis*) suggests possible introgression on the wet islands of the Lesser Antilles. This is also suggested by the elongate labium that is found in both *longirostris* and *archboldi*.

Ozophora pallidifemur pallidifemur Scudder

Figs. 3, 6, 9, 10

Ozophora pallidifemur pallidifemur Scudder, 1958:148–149.

This is a predominantly dark chocolate brown to dark red brown species with contrastingly pale yellow legs. The first, second and third antennal segments also are for the most part pale yellow with the second segment narrowly and the third segment broadly infuscated distally. Antennal segment four is chocolate brown usually with a strongly contrasting white subbasal annulus. The membrane of the front wing lacks an apical pale macula and is uniformly fumose except for the pale veins.

The dorsal surface has upstanding hairs but they are sparse, short, easily abraded and can be readily overlooked. Scudder's original description and figure is otherwise satisfactory. The pronotal coloration is somewhat variable, some specimens have the lateral calloused margins concolorous with the dorsal surface, others having this area pale. The humeral angles are "notched" but often shallowly and obtusely so.

Scudder (1958) described a second species from the Caymans at the same time under the name *Ozophora fuscifemur*. He differentiated it from *pallidifemur* by: 1. its dark fuscous legs (instead of stramineous); 2. by lacking a distinct white fourth antennal annulus but having this area ferruginous and relatively weakly differentiated from the dark distal portion of segment four; 3. lacking spines ventrally on the posterior femora; 4. shape and puncturation of the pronotum; and 5. armature of the forefemora.

I have examined paratypes of both taxa as well as the additional series from Grand Cayman listed below and do not believe that two species are involved. Both do have small spines ventrally on the posterior femora, the punctuation and shape of the pronotum is variable. Scudder's description of *pallidifemur* says the femur has "two long dark subapical spines with four pale hair-like spines proximally . . ." Whereas he says of *fuscifemur* "forefemora ventrally armed with three long and slender subapical spines" (both taxa have one or two minute spines distad of the large spines). It is true that both paratypes of *fuscifemur* before me have three "major" spines on each femur. But of 10 specimens of *pallidifemur* (including four paratypes) five specimens have three spines on each femur, four specimens have three spines on one leg and two on the other (one specimen has only one forefemur with two spines present). The number of "hair-spines" is variable as well as being difficult both to see and to differentiate from the remaining femoral vestiture. Thus, the forefemoral armature does not appear to be diagnostic.

The difference in leg color between the two taxa is striking and for the most part so is the color of the annulation of the fourth antennal segment. However, one female paratype of *pallidifemur* has a fourth antennal annulation as "ferruginous" as that found in *fuscifemur*.

Scudder's illustrations of the hemelytral coloration of *fuscifemur* and *pallidifemur* show the former to have a completely dark clavus and no longitudinal pale striping on the corium. *O. pallidifemur* specimens do have a pale stripe on the elevated claval vein at least basally and generally more extreme pale corial striping although the differences are not so sharply differentiated as on Scudder's illustrations.

Ozophora pallidifemur was described from Grand Cayman and *O. fuscifemur* from Cayman Brac and Little Cayman. I have not seen specimens from Little Cayman but believe the most useful taxonomic conclusion is to recognize the darker specimens from Cayman Brac as a subspecies and I am therefore reducing *fuscifemur* to subspecific status.

Distribution. Originally described from 29 females and 25 males from light traps at three localities on Grand Cayman Island. The nominal subspecies remains known only from there.

In addition to four paratypes I have examined four additional females from a light trap at Bodden Town ("trap O") and one male and one female from Prospect ("trap K"), all taken by M. E. C. Giglioli and in the P. D. Ashlock collection.

Dark specimens particularly of the ssp. *fuscifemur* resemble *umbrosa*. However, *fuscifemur* is readily distinguishable by the notched humeral angles and by details of the male genitalia. The arms of the "cup-like" sclerite (Fig. 3) are widely separated and somewhat like those of *O. levis* (Fig. 2) but are more evenly concave along the inner margins. The posterior margin of the genital capsule (Fig. 9) slopes evenly upward to terminate in an obtuse dorso-caudal angle which is quite unlike the acute sharp edged angle of *levis* (Fig. 8) or the produced edge of *umbrosa* (Fig. 7). The paramere is also distinctive from both *umbrosa* and *levis* despite the variability present in the former. In *pallidifemur* the shaft of the paramere (Fig. 10) is very thick, the inner "tooth" short, stout and does not sweep downward in an arc that occupies most of the inner surface and there is a small secondary tooth-like projection on the shaft near the basal connection.

Ozophora pallidifemur fuscifemur Scudder, **new status**

Ozophora fuscifemur Scudder: 1958:147-148.

As noted above *O. fuscifemur* may readily be distinguished from *O. pallidifemur* by the dark chocolate colored femora and usually by the completely dark clavus and yellowish brown rather white pale annulus on the fourth antennal segment. Scudder's (1958) dorsal view illustration shows the corium to be completely dark except for a large lateral area on the basal half, a subapical pale macula and a round pale spot near the inner angle of the corium. This may be true of the holotype, but on the two paratypes examined the pale lateral area along the basal half of the hemelytron is interrupted by dark interspaces. Scudder comments on the difference in the punctures on the head, pronotum and scutellum between *pallidifemur* and *fuscifemur*. The latter does appear to be somewhat more coarsely punctate on the pronotum.

Distribution. Originally described from Cayman Brac and Little Cayman. I have examined two paratypes from Cayman Brac.

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